

Remarks/Arguments

On page 3 of the Office Action, claims 27, 29-35, and 53 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Izawa et al. (US 6,075,297) in view of Chitayat (US 5,783,877), Munehiro (US 4,445,798), and Umehara et al. (US 5,057,723). Claim 27 is an independent claim, and claims 29-35 and 53 depend directly or indirectly on claim 27. Claim 27 has been amended. The applicants respectfully traverse the rejection for at least the reason that Izawa in view of Chitayat, Munehiro, and Umehara does not teach or suggest every limitation of claim 27.

Claim 27 has been amended to include, *inter alia*, “the reinforcing member... being formed without any hollow or cavity for increasing the rigidity of coil assembly”. For an example of a reinforcing member compatible with this limitation, see FIG. 2 of the specification. The reinforcing member 20 is solid and has no hollow or cavity. Any reinforcing member of claim 27 must have no hollow or cavity.

The Examiner considers the movable piece yoke 24 of Izawa to be a reinforcing member. See Office Action pages 3-4. The movable piece yoke 24 is formed from a thin piece of magnetic material and clearly has a cavity for accepting a coil bobbin 21. See Izawa FIG. 1A, col. 5 lines 17-22. The movable piece yoke 24 and coil bobbin 21 could be considered to collectively comprise a reinforcing member. However, the coil bobbin 21 is provided with a bearing 23 which is slidably fitted around a linear motion shaft 3. See Izawa FIG. 1A, col. 5 lines 23-25. The coil bobbin 21 must always have a hollow so that the total movable piece 20 may slide along the fixed linear motion shaft 3. Izawa provides no teaching or suggestion of a reinforcing

member without any hollow or cavity. Instead, Izawa requires a hollow surrounding a linear motion shaft in every embodiment it presents. Therefore, claim 27 is patentable over Izawa.

Chitayat, Munehiro, and Umehara fail to compensate for the deficiencies of Izawa. Chitayat does not teach or suggest a reinforcing member having an outer shape of a rectangle on which a coil assembly is fittingly mounted. Instead, coil assemblies are fittingly mounted within a ceramic substrate that is separate from the armature. See Chitayat FIGS. 6A-6C, col. 8 lines 18-45. Munehiro and Umehara both teach coil assemblies that surround shafts, as in Izawa. See Munehiro FIG. 5 and Umehara FIG. 5. Claim 27 is not made obvious by any combination of Izawa, Chitayat, Munehiro, or Umehara, and should be allowed. Claims 29-35 and 53 depend on claim 27 and should be allowed for at least the same reasons.

Additionally, as the Examiner notes on page 5 of the Office Action, Izawa does not teach that the movable piece yoke 24 is made of a non-magnetic material. The Examiner relies on Chitayat for teaching a non-magnetic reinforcing member (ceramic substrate 70 with recessed surface 71 and raised islands 72). See Office Action page 5. As noted above, this cannot be the reinforcing member of claim 27. One of ordinary skill in the relevant art would also not be motivated to combine the ceramic material of Chitayat with the design of Izawa. This is because the magnetic movable piece yoke 24 is a yoke for the linear motor. The magnetic field of the movable piece yoke 24 interacts with the field formed by the permanent magnets 110 to contribute to the operation of the motor. Claim 27 has been amended to include, *inter alia*, “the reinforcing member... being not positioned in the magnetic field between the coil assembly and the first and second groups of permanent magnets” for emphasis. Even without this amendment, one of ordinary skill in the relevant art would not be motivated to incorporate a non-magnetic

movable piece yoke 24 into Izawa, as that change would negatively affect the operation of the motor. Claim 27 is allowable for this additional reason.

The application has been amended to place the application condition for allowance. All amendments are supported by the specification. An early notice of allowance is earnestly solicited.

Please charge any shortage in the fees or credit any overpayment to Deposit Account No. 50-3266.

Respectfully submitted,

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